

Liaison Communication Processors: Router (Pass-through) Mode

In industrial communication applications, this functionality is often referred to by brand name products such as Pyramid Integrator or BridgeMUX. In fact, the proper technical term for this type of equipment is “router” where messages from one network are passed-through to another network. This functionality is sometimes confused with that of a protocol converter, which only incidentally bridges different networks, and is primarily concerned with parsing messages from incompatible network protocols and relaying it in the native protocol of the requesting device or system. Routers completely ignore protocol and instead relay the entire message (unparsed) from one network to another..



When all devices along a communication path are protocol compatible, a router functionality is preferred for its simplicity and flexibility.

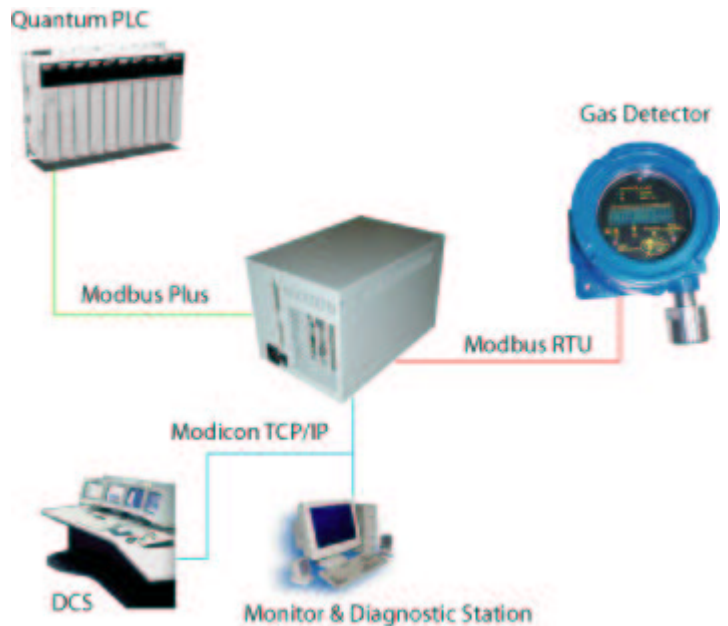
Unlike protocol conversion, individual data points do not require “mapping” between source and destination. Instead, each network node has its “address” recorded within the configuration file so that requests are identified and redirected to the appropriate network and responded to by the remote device.

This not only makes configuration very simple, since only the station and not the individual data points are mapped, but provides complete flexibility in addressing the unprotected memory of a remote device.

Open Access vs Firewall

One of the implications for use of routers over protocol converters is that a master on one network can have unrestricted access to the unprotected memory of all mapped devices on another network. Changes in which data is being requested only need to be made at the master.

This is sometimes undesirable, especially in custody-transfer applications. Using the protocol converter mode of the Liaison communication processors only allows requests where the data is “mapped”, creating an effective firewall since any unmapped request is simply ignored.





Applications

Router mode is a usable option where all connected networks share the same application layer such as Modbus Plus, Modbus RTU and Modicon TCP/IP. Even though all of these networks use different media (custom RS-485, serial and Ethernet), they all share the same addressing structure and function codes. This allows a Modbus message to be passed from Ethernet to serial and back again. As of this writing, the Modicon driver set has been enabled for use with Liaison communication processor router mode functionality. Prospectively, router mode will be enabled for Allen-Bradley protocols (CSP Ethernet, DF-1, Data Highway Plus), the GE family of protocols and others.

Features

- **Multi-channel capabilities:** Liaison communication processors feature multi-channel communication capabilities. Users can implement multiple ports of a single media type (i.e. multiple serial ports--Modbus RTU, Modbus ASCII), bridge to Ethernet or Modbus Plus, or create a single virtual network using all three media types.
- **Redundancy:** Liaison communication processors have remarkable flexibility for implementing redundant networks, even in router applications. Dual Ethernet, Redundant Modbus Plus buses and serial Modbus channels require no special options or settings.
- **Flexible Hardware Configurations:** Serial ports (either RS-232 or RS-485) can be implemented in almost any number, from one to 4, 8, 16, up to 128 ports. Available with RS-232/422 and 485 serial ports featuring surge suppression and optional optical isolation. Contact Liaison or your local authorized representative for a recommended hardware configuration.
- **Extensive Remote Monitoring, Configuration and Diagnostic Capabilities:** Using either the standard built-in Ethernet port or a serial port, all configuration, monitoring and diagnostic data is available through telnet or your web browser. Add stations and get diagnostic information over a modem, network or by direct connection to a serial or Ethernet port.

Configuration Process

The configuration process is outlined in detail within the configuration manual (section 6.4), available as a download from the Liaison website.